City of Newport Beach
Standard Design Requirements

GENERAL

For more information on Design Criteria look in The City of Newport Beach Engineering Standards Manual. It provides consultants with authorized Newport Beach project requirements pertaining to production of construction drawings, project deliverables, related quality assurance, submitting final hard copies and digital plans. This information is intended for all engineering disciplines.
Consultants shall adhere to the CAD requirements for delivering plans. The guidelines shall be enforced during both the project design period and construction services period.

This Manual is not intended to replace codes or accepted industry standards and practices.

1. Submitting hard copy drawings

a. All submitters should contact the project engineer to get a Drawing Number, and a Contract Number. The project engineer shall contact the Public Works Department to get the last Drawing Number assigned for their type of project. The Drawing Number shall be reflected on the right bottom corner of all drawing pages, e.g. W-3567-S, TRM_15634, T_5678_S, etc.

b. Drawings shall exactly 24”x36” cut sheet. Drawing border should be only 1” on the left side of the sheet and ½” on other three sides. Refer to 2-e for more detail.

c. All sheets shall be issued a **SEQUENTIAL NUMERIC SHEET NUMBER.** Alphanumeric numbers shall not be assigned in lieu of numeric numbers. Duplicate numbering such as sheet 6 and 6A shall not be used. In the case of revisions and additions of additional sheets all sheets may have to be re-numbered so they remain sequential or added to the end of the set.

d. Title sheets shall have an index and/or key map **clearly indicating** the sheet numbers issued. Provide a Vicinity map, a legend of abbreviations, symbols and, line types used.

e. Scales for profile shall not be smaller than 1" = 40' horizontal and 1" = 10' vertical. The vertical scale should be changed to appropriate scale when grades are steep or very flat. Scales for plan views shall not be smaller than 1" = 40'. For complex intersections or similar plans, the scale shall be 1" = 10' or as approved by City’s Project Manager.

f. Large tracts shall have separate small-scale maps showing the overall layout of water, sewer, storm drain, and street lighting systems.

g. Profiles shall be shown at the top of the sheets. Street profiles shall reflect the locations of all utilities, including Sewer, Storm, water and other facilities.

h. Typical cross sections of streets shall show locations of all utilities, including oil, petroleum, gas, water, sewer, telephone, cable TV, street lighting, traffic signal, electrical and other facilities.

i. A typical section for each street shall be included.

j. General layout of streets in each sheet shall be oriented on the plan in such a manner as to cause the north arrow to point up or to the left.

k. Bench mark(s) shall be listed on the title sheet, based on the National Geodetic Vertical Datum of 1988, (NAVD88), with complete reference to Benchmark Designation, Elevation, Type and etc.

l. Street drawings shall show the basis of bearing on the title sheet and tie the centerline of the road into the California Coordinate System (NAD83) in at least one location or as many as mutually agreed by the surveyor or engineer with the project engineer in the city.

m. Each sheet shall include the related construction notes, standard and detailed drawings needed for that sheet or clearly reference the related sheets or standard drawings.

2. CAD/Digital Submittal Standards

To facilitate the transfer of Information in to the City's Geographic Information System and digital storage of plans, a digital file on CD-R (in addition to a hard copy) shall be submitted per the following specifications:

a. The entire project shall be prepared in model space in full size (1 to 1), using State Plane Coordinate System, California Zone 6, SPCS 83 FIPS Zone 0406, In accordance with County of Orange Ordinance 3809 and digital submission of Cadastral Surveys Information and Specifications.

b. Survey maps, Parcel maps and Lot line adjustment maps shall be prepared per Orange County Ordinance No. 3809/Digital Map Submission of 1991 (the most recent and updated version).

c. CADD (dwg) file should include paper space layout for each individual sheet and overall uncut site plan on model space, which encompasses the design of the entire project in state plane coordinate.

d. Paper space shall be designed so that final plotted plan will be a sheet exactly 24"x36". Drawing border should be 1” on the left side of the sheet and ½” on other three sides. All text shall be .1" or larger.

e. All drawings (Layout sheets) shall be in compliance with Newport Beach standard sheets, line types, standard layers and naming drawing files. Only **ACAD STANDARD FONTS** shall be used.
Please refer to (F:\USERS\PBW\Shared\CAD_STD\) for list of standard sheets, blocks, line types and CAD DESIGN STANDARD notes.

f. Each project should start with a Drawing Number assigned by Public Works Department. Please contact project engineer to get the next available Drawing Number. All file names shall comply with the City standard file naming convention. e.g. A water main replacement project will have a CAD file name as W_4567_S.dwg and W_4567_S.pdf for image file. Every sheet of drawing has to include the Drawing Number on the lower right corner.

When submitting separate CAD files for each individual sheet then an extension (_001) for sheet one of (___) and so on shall be added to the end of file name (eg W_4567_S_001.dwg).

Contact the project engineer for instructions and help on how to name the drawing files.

Note: Each Project Manager is required to inform the contracted firm to conform with the City of Newport Beach CAD policies. Every contracted firm or any company planning to submit a set of plans for the approval should incorporate the City's CAD standards in to their drawings.

g. All submittals shall be presently in **Civil 3D 2015** (.DWG). Please check with project engineer for the latest City approved ACAD version.

h. Submit detailed written instructions (including exact directory path and file names) on the procedures that are required to extract the files from the CD-R. Please submit complete files including copy of all reference files and plot files. All reference files should be included in the same directory and follow the file naming structure required by the City.

(i) When the files were either "backed-up" or stored using compression software or third party program, submitting party shall provide a legal copy of the compression software or third-party programs used.

(ii) All the XREF paths shall be defined as **Implicit Path**.

i. Shading is not permitted. Hatching is acceptable in a separate layer. Aerial photos may be used with approval of project manager.

j. Use a polyline to construct each building footprint to form a closed polygon. Design with a continuous line; never break lines within a curve. You may still display the available line type on the drawings.

3. Checking of Digital Submission

Digital data will be checked for the following:

a. Correct layering
b. Correct coordinate system
c. Consistent digital and hard copy plans

4. Approval Signatures

a. Each sheet of set of hard copy plans or CAD files submitted for the engineer's approval shall be signed by the Civil Engineer responsible for that design, except that a sheet of complex grading, structural, mechanical or electrical plans shall be signed by the Professional Engineer licensed in that discipline who is responsible for that design.

b. All Civil and Professional Engineers signing plans to be submitted for the Engineer's approval shall be registered by the State of California.

c. Plan revisions subsequent to the Engineer's approval shall be re-signed per the requirements of 2a, 2b and 2c prior to re-submittal for the Engineer's approval.

d. Traffic Control Plans, where required shall be signed by a Registered Traffic Engineer.

5. Standard Layers

The following table is the City of Newport Beach Standard layering format. This format shall be incorporated in to all drawing files submitted to the City.

The CAD operator needs to use his/her discretion on choosing line weight and line type scale based on the need of their project drawing. The designated line is the minimum. The scale may have to be adjusted for all suggested line types according to the scale of the drawings.

The structure of the Layering naming convention shall generally be X or P – Category – Descriptor – Modifier

All Layers begin with X (existing) or P (Proposed)

For example: X-S-MH for existing sewer manholes or P-SD-STRUCT-ANNO for Annotation text on a proposed storm drain structure.

Layer "0" for block creation only; there shall be no linework in Layer "0".

Layers should be descriptive without being too narrowly defined.

The following Layers are typical to Plans. The list is not meant to be exhaustive and it's the responsibility of each user to generate layers appropriate for their drawings.

* Line weight or type not defined

Layer	Description	Line Type	Line Weight (in)	AutoCAD Standard Pen
SURVEY LAYERS				
X-SURV-POINT	Survey Point	*	*	*
X-SURV-TEXT	Survey Text	Continuous	*	*
X-SURV-CONTOUR-MIN	Minor Survey Contour	Dashed	0.01	76
X-SURV-CONTOUR-MAJ	Major Survey Contour	Dashed	0.015	78
X-SURV-CL	Existing Center Lines	Centerline	0.01	7
X-SURV-BM	Exist. Benchmark	*	*	*
X-PL	Exist. Property Line	Divide	0.01	90
X-RW	Exist Right Of Way	Right of Way	0.01	90
P-RW	Proposed Right of Way	Right of Way	0.028	212

Layer	Description	Line Type	Line Weight (in)	AutoCAD Standard Pen
X-EMT	Easement	Phantom	0.01	90
P-EMT	Proposed Easement	Phantom	.028	212
STORM DRAIN				
X-SD-LINE	Exist Storm Drain Line	Storm Drain	0.012	146
P-SD-Line	Proposed Storm Drain Line	Storm Drain	0.024	211
X-SD-ANNO	Exist. Storm Drain Annotations / Dimensions	Continuous	*	*
X-SD-MH	Exist. Storm Drain Manhole	Dashed	0.012	146
X-SD-DETAIL	Exist. Storm Drain Details	Dashed	0.012	146
P-SD-DETAIL	Proposed Strom Drain Details	Continuous	0.024	211
X-SD-CB	Exist. Storm Drain Catch Basin	Dashed	0.012	146
X-SD-STRUCT	Exist. Storm Drain Structure	Dashed	0.012	146
X-SD-STRUCT-CDS	Exist. Storm Drain Structure, CDS Unit	Dashed	0.012	146
X-SD-STRUCT-JUNCT	Exist Storm Drain Junction Structure	Dashed	0.012	146
SEWER				
X-S-LINE	Exist. Sewer Line	Sewer	0.015	216
X-S-LINE-FMAIN	Exist. Sewer Force Main	Sewer	0.015	216
P-S-LINE	Proposed Sewer Line	Sewer	0.024	71
X-S-LATERAL	Exist. Sewer Lateral	Sewer	0.015	216
X-S-CO	Exist. Sewer Cleanout	Sewer	0.015	216
X-S-MH	Exist. Sewer Manhole	Dashed	0.015	216
X-S-DETAIL	Exist. Sewer Detail	Dashed	0.015	216
P-S-DETAIL	Proposed Sewer Detail	Continuous	0.024	71

Layer	Description	Line Type	Line Weight (in)	AutoCAD Standard Pen
X-S-ANNO	Exist. Sewer Annotation / Dimensions	Continuous	*	*
X-S-STRUCT	Exist. Sewer Structure	Dashed	0.015	216
X-S-STRUCT-PUMP	Exist. Sewer Pump Station	Dashed	0.015	216
STREET LIGHT				
X-SL	Exist. Street Light	*	0.012	8
P-SL	Proposed Street Light	*	0.020	6
X-SL-COND	Exist. Street Light Conduit	Elec	0.012	8
P-SL-COND	Proposed Street Light Conduit	Elec	0.020	6
X-SL-COND-PB	Exist. Streetlight Pull Box	Dashed	0.012	8
X-SL-METER	Exist. Street Light Meter	Dashed	0.012	8
X-SL-ANNO	Annotation Dimensions	Continuous	*	*
X-SL-DETAIL	Street Light Detail	Dashed	0.012	8
ROADWAY				
X-R-TC	Exist. Road Top of Curb	Dashed	0.01	20
P-R-TC	Proposed Top of Curb	Continuous	0.015	217
X-R-GUTTER	Exist. Road Gutter	Dashed	0.01	120
P-R-GUTTER	Proposed Road Gutter	Continuous	0.02	148
X-R-FL	Exist. Flow Line	Dashed	0.01	180
P-R-FL	Proposed Flow Line	Continuous	0.02	5
X-R-SW	Exist. Sidewalk	Dashed	0.01	40
P-R-SW	Proposed Sidewalk	Continuous	0.02	148
S-R-SW-RAMP	Exist. Curb Ramp	Dashed	0.01	40
X-R-XGUTTER	Exist. Cross Gutter	Dashed	0.01	120
X-R-ANNO	Annotation and Dimensions	Continuous	*	*
X-R-DETAIL	Existing Road Detail	Dashed	0.01	20

Layer	Description	Line Type	Line Weight (in)	AutoCAD Standard Pen
P-R-DETAIL	Proposed Road Detail	Continuous	0.02	148
TRAFFIC				
X-T-SIGN	Exist. Traffic Sign	*	0.01	40
X-T-LOOP	Exist. Traffic Loop	Continuous	0.01	40
X-T-CABINET	Exist. Traffic Cabinet	*	0.01	40
X-T-STRIPING	Existing Striping	Continuous	0.01	*
P-T-STRIPING	Proposed Striping	Continuous	0.01	*
X-T-SIGNAL	Existing Signal	*	0.01	*
X-T-DETAIL	Traffic Detail	Dashed	0.01	40
X-T-ANNO	Traffic Annotation and Dimensions	Continuous	*	*
WATER				
X-W-LINE	Exist. Water Lines	Water	0.012	4
X-W-HYDRANT	Exist. Fire Hydrant	Water	0.012	4
P-W-LINE	Proposed Line	Water	0.024	141
X-W-LINE-VAC	Exist Air Release Valve	*	0.012	4
X-W-LINE-BF	Exist Back Flow Device	*	0.012	4
X-W-VALVE	Exist. Water Valve	*	0.012	4
X-W-STRUCT	Exist Water Vault	Dashed	0.012	4
X-W-STRUCT-PUMP	Exist Pump Station	Dashed	0.012	4
X-W-DETAIL	Exist Water Detail	Dashed	0.012	4
X-W-ANNO	Annotation and Dimensions	Continuous	*	*
BUILDING				
X-BLD-FOUND	Exist Building Foundation	Dashed	0.01	110
P-BLD-FOUND	Proposed Building Foundation	Continuous	0.024	211

Layer	Description	Line Type	Line Weight (in)	AutoCAD Standard Pen
X-BLD-INTERIOR	Exist Building Interior	Dashed	0.01	110
X-BLD-WINDOW	Exist Building Window / Door	Dashed	0.01	110
X-BLD-DETAIL	Building Detail	Dashed	0.01	110
X-BLD-ANNO	Annotations and Dimensions	Continuous	*	*
UTILITIES				
X-UTIL-GAS	Exist Gas	Gas	0.01	30
X-UTIL-ELEC	Exist Electrical	Elect	0.01	200
X-UTIL-TELE	Exist Telephone	Tel	0.01	170
X-UTIL-CABLE	Exist Cable	CTV	0.01	120
X-UTIL-TELE-PB	Exist Telephone Pull Box	Dashed	0.01	170
X-UTIL-CABLE-PB	Exist Cable Pull Box	Dashed	0.01	120
X-UTIL-ELEC-POLE	Exist Electrical Pole	*	0.01	200
LANDSCAPE				
X-LS-TREE	Existing Tree	*	0.01	*
X-LS-IRRIGATION	Existing Irrigation Line	Dashed	0.01	130
Miscellaneous				
HATCH	Hatch or Pattern	*	*	*
PROFILE	Profile	*	*	*
PROFILE-TEXT	Profile Text	*	*	*
PS-BORDER	Paperspace Border	*	*	*
PS-BORDER-TEXT	Paperspace Title block, legends, logo, etc.	*	*	*
MS-TEXT	Model Space Text	*	*	*
IMAGE	Images	*	*	*
VIEWPORT	Viewports	Continuous	*	*
CONST LINE	Construction Line (not printed)	*	*	*

7. Standard Color Tables (CTB files)

The City of Newport Beach Color Tables shall be used creating drawing files. Request a copy of CNB_Full_Scale.ctb for full-sized plots and CNB_Half_Scale.ctb for half-sized plots.

8-Newport Beach Standard Sheets

Standard sheets can be found in Users\PBW\Shared\CAD_STD\STD Sheets

9-Newport Beach Standard Blocks

Standard sheets can be found in Users\PBW\Shared\CAD_STD\Blocks

10-Newport Beach Standard Legends and Abbreviations

Standard Abbreviations can be found on the Standard CNB Title Sheet